Amendments to the Claims

A listing of the entire set of pending claims is submitted herewith per 37 C.F.R. § 1.121.
This listing of claims will replace all prior versions and listings of claims in the
application.

1. (Previously presented) A method for a distributed beaconing period protocol for a
device in an ad hoc network of devices, comprising the device performing:

dividing a medium access time into a sequence of at least one contiguous
superframe beginning at a Beacon Period Start Time;

partitioning the superframe into a slotted Beaconing Period (BP), having a
plurality of contiguous beacon slots, followed by a data transfer period; and

associating with at least one of an existing ad hoc network BP or creating a new
ad hoc network BP as the BP of the device.

2. (Previously presented) The method of claim 1, further comprising:

if the BP of the device is not protected in at least one neighboring BP, protecting
the unprotected BP in the at least one neighboring BP; and

once the BP of the device is protected, operating normally.

3. (Previously presented) The method of claim 2, wherein the protecting the unprotected
BP further comprises including a first reservation for the BP in the beacon of the device
in the at least one neighboring BP.

4. (Previously presented) The method of claim 3, wherein the reservation is a
Distributed Reservation Protocol DRP reservation of type BP and priority = BP.

5. (Previously presented) The method of claim 3, wherein the associating further
comprises:

choosing an empty slot of the BP of the device; and

beaconing a beacon of the device in the chosen empty slot.

6. (Previously presented) The method of claim 5, further comprising including information regarding the beacons of other devices in the beacon of the device.

7. (Previously presented) The method of claim 6, wherein the protecting the unprotected BP further comprises including a second reservation in the beacon of the device to announce the BP of said other devices.

8. (Previously presented) The method of claim 7, wherein the second reservation is a Distributed Reservation Protocol DRP reservation of type BP and priority = BP.

9. (Previously presented) The method of claim 3, wherein the associating comprises:
  scanning the medium to detect at least one BP during the at least one superframe;
  if at least one BP is not detected, starting a new BP as the BP of the device at a beacon period start time calculated in a pre-determined manner; and
  if at least one BP is detected, deciding to perform one of:
    i.   joining at least one of the at least one detected BP as the BPs of the device, and
    ii.   starting a new BP as the BP of the device at a beacon period start time determined in a pre-determined manner.

10. (Previously presented) The method of claim 9, wherein the associating further comprises:
  choosing an empty slot of the BP of the device and
  beaconing a beacon of the device in the chosen empty slot.

11. (Previously presented) The method of claim 10, further comprising including information regarding the beacons of other devices in the beacon of the device.

12. (Previously presented) The method of claim 8, wherein the protecting further

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comprises including a third reservation in the beacon of the device in the neighboring BPs to announce the BP.

13. (Previously presented) The method of claim 12, wherein the third reservation is a Distributed Reservation Protocol DRP reservation of type BP and priority = BP.

14. (Previously presented) The method of claim 3, wherein the operating normally comprises:

receiving beacons over the medium; and

when a beacon comprising a Distributed Reservation Protocol DRP reservation of type BP is received, performing

- scanning for a new BP, and
- when a new BP is detected, protecting the new BP.

15. (Previously presented) The method of claim 14, wherein the protecting further comprises including a fourth reservation in the beacon of the device to protect the BP.

16. (Previously presented) The method of claim 15, wherein the fourth reservation is a DRP reservation of type BP and priority = BP.

17. (Previously presented) The method of claim 14, wherein the operating normally further comprises a device optionally switching BP if two or more BPs co-exist.

18. (Previously presented) The method of claim 17, wherein the switching BP by the device further comprises:

including a special switching announcement field in a beacon to announce a new BP; and

beaconing for at least a predetermined announcement number of consecutive superframes with the beacon including the special switching announcement field.

19. (Previously presented) The method of claim 18, wherein the beaconing further

comprises one selected from the group consisting of:

> (a) performing
>
> - including a DRP reservation of type BP to protect the new BP, if the new BP is not already protected, and
>
> - stopping transmission of the beacon, if the new BP is already protected; and
>
> (b) transmitting a beacon in the new BP.

20. (Previously presented) The method of claim 18, wherein the operating normally further comprises:

when a beacon comprising a BP switching announcement of another device is received, performing

> scanning for a new BP, and
>
> - when a new BP is detected, protecting the new BP.

21. (Previously presented) The method of claim 2, wherein the operating normally further comprises terminating the BP.

22. (Previously presented) The method of claim 2, wherein the operating normally further comprises clearing a Distributed Reservation Protocol DRP BP reservation of the device when no beacons are received during the BP for a pre-determined clearing number of consecutive superframes.

23. (Currently amended) The method of claim 14, wherein the operating normally further comprises when at least two BPs collide, until there are no longer any colliding BPs, repeatedly performing at least one of selected from the group consisting of:

> (a)   performing:
>
> - searching each colliding BP for enough empty beacon slots for the devices of an other another colliding BP, and
>
> - moving at least one colliding BP to a non-colliding beacon period start time; and

(b)   performing

- searching the superframe for enough empty beacon slots for the BP, and

- and moving the BP to the empty slots in the superframe.

24. (Previously presented) The method of claim 23, wherein the operating normally further comprises when an existing DRP reservation collides with a BP, moving the colliding Distributed Reservation Protocol DRP reservation to a non-colliding time.

25. (Previously presented) The method of claim 23, wherein the operating normally further comprises moving the BP to a non-colliding time when an existing Distributed Reservation Protocol DRP reservation collides with a BP.

26. (Previously presented) The method of claim 1, further comprising each device of the ad hoc network of devices beaconing in the same BP, by performing a selected one from the group consisting of:

- beaconing in parallel in each BP of each device of said network of devices; and

- switching a BP to beacon in a same BP as other devices of said network of devices.

27. (Previously presented) The method of claim 26, wherein a device that does not have to switch its BP is chosen in a distributed way based on an identifier of each device of said network of devices.

28. (Previously presented) The method of claim 26, wherein a device that does not have to switch its BP is chosen in a distributed way based on the number of occupied beacon slots in the BP of each device of said network of devices.

29. (Previously presented) The method of claim 26, wherein a device that does not have to switch its BP is chosen in a distributed way based on the size of the portion of the

superframe that is reserved by the beacons in a BP of a device of said network of devices.

30. (Previously presented) The method of claim 1, wherein each device of said network of devices may beacon in a different BP.

31. (Previously presented) A distributed beaconing apparatus for an ad hoc network device, comprising:

a receiver for receiving beacons and data transfers from other ad hoc network devices;

a transmitter for transmitting beacons of the device and data;

a distributed beacon period processing component that processes received beacons and beacons of the device for transmission;

a controller operatively coupled to said distributed beacon processing component and configured to direct said processing component to -

      i.   divide the medium into a sequence of superframes comprising at least one slotted beaconing period (BP) and including a certain number of beacon slots each having a pre-determined beacon slot length, said slotted BP being followed by a data transfer period, and

      ii.   associate with at least one of an existing ad hoc network BP and a new ad hoc network BP as the BPs of the device.

32. (Previously presented) The apparatus of claim 31, wherein said controller is further configured to direct said distributed beacon processing component to:

      iii.   protect the BPs of the device in neighboring BPs; and

      iv.   operate normally, once the BP of the device is protected.

33. (Previously presented) The apparatus of claim 32, wherein the controller is further configured to:

        choose an empty slot of the BP of the device; and

        beacon a beacon of the device in the chosen empty slot.

34. (Previously presented) The apparatus of claim 32, wherein the distributed BP processing component protects the BP of the device by including a Distributed Reservation Protocol DRP reservation of type BP and priority = BP in the beacon of the device to announce the BP to neighboring devices.

35. (Previously presented) The apparatus of claim 34, wherein the distributed BP processing component is further configured to include information regarding the beacons of other devices in the beacon of the device.

36. (Previously presented) The apparatus of claim 35, wherein the controller is further configured to control the distributed BP to:

      - scan the medium to detect at least one BP during the at least one superframe;

      - if at least one BP is not detected, start a new BP as the BP of the device at a beacon period start time calculated in a pre-determined manner; and

      - if at least one BP is detected, decide to perform one of:

i.   join one of the at least one detected BP as the BP of the device, and

ii.   start a new BP as the BP of the device at a BP start time determined in a pre-determined manner.

37. (Currently amended) The apparatus of claim 36, wherein for normal operation the controller is further configured to:

      when a received beacon includes at least one of a Distributed Reservation Protocol DRP reservation of type BP and a BP switching announcement for ~~an other~~ another device

      - scan for a new BP, and

      - when a new BP is detected, protect the new BP;

      when a beacon of a neighbor is received, protect the neighbor BP;

      when the device switches BPs announce in the beacon of the device, for a predetermined announcement number of consecutive superframes, that the device is

switching BP;

optionally switch BPs if two or more BPs co-exist;

terminate the BP;

clear a DRP BP reservation of the device when no beacons are received during the BP for a pre-determined clearing number of consecutive superframes[[.]]

when at least two BPs collide, until there are no longer any colliding BPs, repeatedly perform at least one function selected from the group consisting of:

search each colliding BP for enough empty beacon slots for the devices of another colliding BP; and move at least one colliding BP to a non-colliding beacon period start time; and

when an existing DRP reservation collides with a BP, moving the colliding DRP reservation to a non-colliding time of the data transfer period.